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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,552	10/01/2003	Kyung-Su Chae	041993-5347	5736
26633	7590	07/27/2005	EXAMINER	
HELLER EHRMAN WHITE & MCAULIFFE LLP			CHUNG, DAVID Y	
1717 RHODE ISLAND AVE, NW			ART UNIT	
WASHINGTON, DC 20036-3001			PAPER NUMBER	
			2871	

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/674,552

Applicant(s)

CHAE ET AL

Examiner

David Y. Chung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,8-10 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,11-14,16,17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 07 April 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I in the reply filed on May 5, 2005 is acknowledged.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 1. Claims 1, 4-7, 11-14, 16, 17 and 19-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Shiba et al. (U.S. 6,245,469) in view of Yamamoto et al. (JP 09-138410).**

As to claims 1, 11, 16 and 17, Shiba et al. discloses a method of manufacturing a liquid crystal display including forming spacers using an inkjet method. In figures 1F and 1G, Shiba et al. discloses forming a plurality of holes 14 in the photoresist layer 12 to expose the substrate. Figures 1I-1K discloses forming spacers 17 in the holes by applying resin 16 using an inkjet head 15. Figures 1A-1K show the color filter substrate. See column 5, line 20 – column 6, line 50. Shiba et al. teaches that a counter substrate

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is provided with thin film transistors and pixel electrodes thereon opposite the color filter substrate in order to encapsulate the liquid crystal material. Shiba et al. also teaches that alignment layers are provided on the inside of both substrates. See column 8, lines 28-47.

Shiba et al. does not disclose that the alignment layers are made from an inkjet method. Yamamoto et al. discloses forming an alignment film using an inkjet method. Yamamoto et al. discloses that by using the disclosed method to form the alignment film, the problem of irregular thickness due to variation in overlap amount of liquid drops is prevented. See abstract. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the inkjet method of Yamamoto et al. to form the alignment film in order to prevent the problem of irregular thickness.

As to claims 12-14, figures 1A-1K of Shiba et al. clearly show the steps of exposing portions of the upper or lower substrates and forming spacers in the holes using an inkjet method.

As to claims 4-7, Shiba et al. does not disclose forming the alignment film using an inkjet method. Yamamoto et al. discloses an inkjet method for forming an alignment film. Yamamoto et al. discloses providing a nozzle with a plurality of holes and attaching an alignment material supplying unit for supplying the material. Yamamoto et al. also discloses opening and closing the holes in the nozzle and moving the nozzle to apply alignment material to the substrate. See paragraphs 0017-0023. It would have

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been obvious to one of ordinary skill in the art at the time of invention to employ all of these elements since the benefit taught by Yamamoto et al. comes from using the disclosed method in its entirety (See discussion of claims 1, 11, 16 and 17 above).

As to claims 19-21, Yamamoto et al. does not disclose applying alignment material to both substrates. However, Shiba et al. discloses that alignment layers are formed on the inside of both the color filter substrate and the counter substrate. See column 8, lines 28-47. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the method of Yamamoto et al. to form alignment layers on both substrates since this was required according to Shiba et al.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (571) 272-2288. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.



David Chung  
GAU2871

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07/22/05